

### **REMARKS**

Claim 60 has been added. No new matter has been added by virtue of that new claim. For instance, support for that new claim appears on page 60 of the application.

Claims 1, 5, 9, 10, 12, 15-17, 20-22, 30 and 37-42 were rejected under 35 U.S.C. 112, first paragraph. As grounds for the rejection, the following is stated at page 2 of the Office Action:

However, none of the working examples presented in present specification shows a polymer having such silanol group (i.e., a hydroxyl group that is directly covalently linked to a Si atom).

The rejection is respectfully traversed.

The definition of silanol in the present application is accurate. See the enclosed documents.

The polymer structures provided in the examples of the present application also permit silanol groups. Note the Si-O- groups that provide open valence that can permit hydroxyl (i.e. silanol).

In view thereof, reconsideration and withdrawal of the rejection are requested.

Claims 1, 5, 9, 10, 12, 15, 17, 21, 30 and 37-42 under 35 U.S.C. 102(e) over Barclay et al. (U.S. Patent Publication 2003/0224286). The rejection is traversed.

Under separate cover, Applicants will submit a Rule 132 Declaration that shows the cited disclosure of U.S. Patent Publication 2003/0224286 has the same inventorship with the present application.

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Respectfully submitted,



Peter F. Corless (Reg. 33,860)  
EDWARDS & ANGELL, LLP  
P.O. Box 55874  
Boston, MA 02205  
(617) 439-4444

# HACKH'S **CHEMICAL DICTIONARY**

[*American and British Usage*]

*Containing the Words Generally Used in Chemistry,  
and Many of the Terms Used in the Related  
Sciences of Physics, Astrophysics, Mineralogy,  
Pharmacy, Agriculture, Biology,  
Medicine, Engineering, etc.*

*Based on Recent Chemical Literature*

**FOURTH EDITION**

Completely Revised and Edited by

**JULIUS GRANT**

M.S.C., PH.D., F.R.I.C. CHEMICAL CONSULTANT

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**silanol.**  $R_4-Si(OH)_n$ . See *silane*.

**silantriol.** A hypothetical hydrolysis product of a monosubstituted chlorosilane of the type  $R-Si(OH)_3$ . Silantriols condense to form 3-dimensional polymeric resins.

**silanol.** Silicol. The trivalent group  $\equiv SiOH$ .

**Silastic.** Trademark for a heat-stable silicone, q.v. Cf. *silicone rubber*

**silavans.** Group name for colorless, high-melting-point, strong polymers, containing silicon, carbon, and nitrogen.

**silbamin.** Silver fluoride.

**Silberrad, Oswald John.** 1878-1960. British chemist, noted for his work on explosives.

**Silesia explosive.** A high explosive: potassium chlorate 75, nitrated resin 25%.

**silex.** A heat- and shock-resistant glass (98% quartz). liquid- Water glass.

**Sil-Fos.** Trademark for an alloy, m.625-705: Cu 80, Ag 15, P 3%; used for brazing alloys containing copper.

**silica.**  $SiO_2 = 60.1$ . Silicon dioxide, silicic acid anhydride. Occurs abundantly in nature (12% of all rocks), and exists in 7 crystalline forms. Classification: (1) Phenocrystalline or vitreous minerals; see *quartz*. (2) Cryptocrystalline and amorphous minerals; see *chalcedony*. (3) Amorphous and colloidal minerals; see *opal*. **amorphous-** Colorless powder, m.1650, insoluble in water, soluble in hot alkalies or hydrofluoric acid; used for chemical glassware. **colloidal-** See *silicic acid*. **crystalline-** Colorless, transparent prisms, m.1760, insoluble in water, soluble in hydrofluoric acid. Used in optical instruments, kitchenware, and chemical plant. The main crystalline forms (quartz, tridymite, and cristobalite) have definite transition points (870 and 1470°C, respectively).

**s. brick.** A firebrick containing over 92% s.; its crystalline phase is cristobalite and tridymite. **s. gel.** Gelatinous s. which, if activated, absorbs water; used to dry blast-furnace gases, air, and other gases. **s. minerals.** Rock-forming minerals comprising the groups, q.v.: amphiboles, andalusite, cancrinite, sodalite, chlorite, feldspar, garnet, iolite, leucite, melilite, mica, nephelite, olivine, pyroxene, scapolite, topaz, tourmaline, zeolite, zoisite; also beryl, quartz, serpentine, talc.

**silicam.**  $Si(NH)_2 = 100.2$ . White powder from heating silicon imide. Insoluble in water; forms silicon nitride,  $Si_3N_4$ , when further heated.

**silicane.** (1) A silane, i.e., a compound of the type  $Si_xH_y$ . (2)  $SiR_4$ . R is a hydrocarbon radical. (3)  $SiH_4 = 32.08$ . Monosilane, silicomethane, silico-hydride. Colorless gas, b.-112. **bromo-**  $SiH_3Br = 111.0$ . Colorless gas, b.1.8. **chloro-**  $SiH_3Cl = 66.54$ . Colorless gas, b.-30. **di-**  $Si_2H_6 = 62.16$ . **Silicoethane,** a gas, m.-132. **dibromo-**  $SiH_2Br_2 = 189.91$ . Colorless liquid, d.2.17, b.66. **dichloro-**  $SiH_2Cl_2 = 100.99$ . Colorless gas, b.8.3. **dimethyl-**  $Si_2H_5Me_2 = 60.12$ . Dimethylmonosilane. Colorless gas, b.-20. **ether-**  $(SiH_3)_2O = 78.17$ . **Disilane oxide.** Colorless gas, b.15. **ethoxytriethyl-**  $Et_3SiOEt = 160.22$ . Triethylsilane ethyl oxide, triethyl silicol ethyl ether. Colorless liquid, b.153, insoluble in water. **hydroxy-** Silicol. **methyl-**  $MeSiH_3 = 46.11$ . Methylmonosilane. Colorless gas, b.-57. **tetra-**  $Si_4H_{10} = 122.31$ . Silicobutane. A gas, m.-94. **tetrabromo-** Silicon bromide.

**tetrachloro-** Silicon chloride. **tetraethyl-**  $Si_4H_8 = 144.25$ . Silicon tetraethyl, siliconane. less liquid, d.0.7682, b.153. **tetrafluoro-** fluoride. **tetraiodo-** Silicon iodide. **tetram-**  $SiMe_4 = 144.22$ . Silicon tetramethyl. Co liquid, d.0.645, b.27. **tetraphenyl-**  $Si(C_6H_5)_4 = 336.24$ . Silicon tetraphenyl, tetraphenyl s. Colorless crystals, m.233. **tri-**  $Si_3H_8 =$  Silicopropane. A gas, m.-117. **trib-**  $SiHBr_3 = 268.82$ . Silicobromoform. Col liquid, d.2.7, b.109. **trichloro-** Silicochloro **trichloroethyl-**  $Si(C_2H_5)Cl_3 = 163.47$ . Col liquid, d.1.239. **trichlorophenyl-**  $Si(C_6H_5)C = 211.47$ . Colorless liquid, d.1.326, b.197, de in water. **triethyl-**  $(C_2H_5)_3SiH = 116.18$ . Tr. silicon, silicoheptane. Colorless liquid, d. b.107, insoluble in water. **trifluoro-**  $SiHF_3 =$  Silicofluoroform. Colorless gas, b.-80. **tri-**  $SiI_3H = 409.83$ . Siliciodoform. Red li d.3.314, b.220.

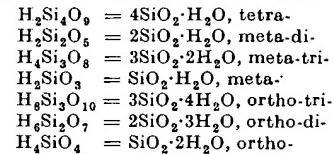
**silicate.** A salt derived from silica or the silicic. Silicates form the largest group of minerals (*silica*), and are derived from  $M_2SiO_4$ , *orthosilicate* and  $M_2SiO_5$ , *metasilicate*, which may combine to form *polysilicates*. Except for the alkali silicates they are insoluble in water. See *silica mineral*. Natural: Asbestos. Man-made: (silica, and aluminosilicate fibers, rock wool, wool).

**s. cement.** See *dental cement*. **s. of Sodium silicate.**

**siliceous.** Containing silica. **s. algae.** See *s. deposit*. **s. sinter.** The solid accumulations of silica deposited from hot mineral springs. **geyserite.** **s. earth.** Silica of diatomite or purified by boiling with dilute acid, washing, calcining; a filter medium (U.S.P.). **s. sinter deposit.**

**silicic.** (1) Containing silicon. (2) Containing s. acid. **s. acid.**  $H_4SiO_4 = 96.3$ . Orthosilicic White powder, slightly soluble in water.  $H_2Si_2O_5$  or  $H_6Si_2O_7$ . White, insoluble powder. **meta-**  $H_2SiO_3 = 78.1$ . White powder, insoluble in water. **tri-**  $H_4Si_3O_8 = 216.3$ . White, insoluble powder.

#### SILICIC ACIDS



**silicide.**  $M_2Si$ . M is Fe, Ni, Co, Cr, Mn, Cu, or *silicification*. The gradual replacement of rock fossils by silica (petrification).

**silicified.** Describing an organic material, wood, that has been petrified.

**silicium.** Silicon.

**silico-** Prefix indicating silicon, generally in organic compounds. **s. benzoic acid.**  $PhSiOOH = 116.92$ , insoluble in water. **s. bromoform.**  $SiHBr_3 = 268.9$ . Heavy, colorless liquid, d.2.7, b. decomps. by water. **s. butane.** See *silanes*.

**calcium.** A product of the electric furnace used to deoxidize steel. **s. chloroform.**  $SiHCl_3 = 135$ .

# Silanol

From Wikipedia, the free encyclopedia.

## Contents

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## General

**Silanols** are compounds containing silicon atoms to which hydroxy substituents bond directly. They are considered to be heavier analogues of alcohols.

Silanols are named, when the hydroxy group is the principal one, by adding the suffix **-ol** to their mother name. If the hydroxy group is not the principal one, silanols are named by using the prefix **hydroxy-** according to the substitutive nomenclature. These rules are almost the same as those of alcohol, with the exception that silane is used as the mother hydride.

## History

Silanols were first synthesized in 1871 by Albert Ladenburg. The first example was triethylsilanol. At that time, they were called **silicols**, a word that he coined.

## Synthesis

Silanols are generally synthesized by hydrolysis of halosilane, alkoxysilane, or aminosilane; by oxidation of hydrosilane; or by hydrolysis of arylsilane in the presence of strong acid.

## Properties

Silanols are generally dehydrated very easily, giving disiloxanes in the presence of acid, base, or even heat. Because of this property of self-condensation, the synthesis and isolation of silanols are difficult.

Silanols have hydroxy substituents, and so they have hydrogen bonding to each other in solution and even in crystals.

Silanols exist not only as chemical compounds but also on the surface of silica. From the viewpoint of organometallic chemistry, silica can be considered as an enormous ligand, and it is used as supports for catalysts of many reactions.

Retrieved from "<http://en.wikipedia.org/wiki/Silanol>"

Categories: Inorganic compounds

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